

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization International Bureau



(43) International Publication Date  
30 June 2005 (30.06.2005)

PCT

(10) International Publication Number  
**WO 2005/058145 A2**

(51) International Patent Classification<sup>7</sup>: **A61B** (US). WINSTON, Ken, R. [US/US]; 24668 Foothills Drive North, Golden, CO 80401 (US).

(21) International Application Number: PCT/US2004/042488 (74) Agent: MACHELEDT, Jean, M.; Macheledt Bales & Heidmiller LLP, 501 Skysail Lane, Suite B100, Fort Collins, CO 80525-3133 (US).

(22) International Filing Date: 17 December 2004 (17.12.2004)

(25) Filing Language: English (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(26) Publication Language: English

(30) Priority Data: 60/530,696 17 December 2003 (17.12.2003) US (84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO,

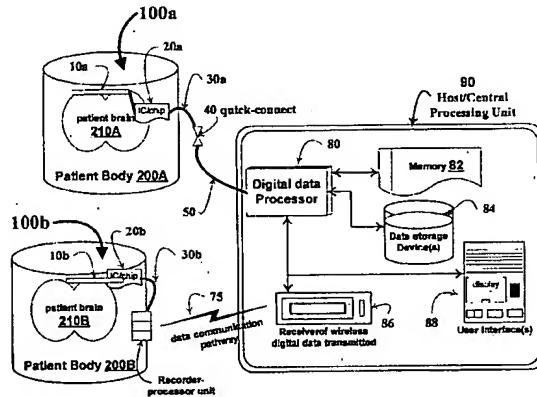
(71) Applicant (for all designated States except US): THE REGENTS OF THE UNIVERSITY OF COLORADO, A BODY CORPORATE [US/US]; 4001 Discovery Drive, Suite 390 / 588 UCB, Boulder, CO 80309 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): VANSICKLE, David, P. [US/US]; 2041 Ivy Street, Denver, CO 80207

[Continued on next page]

(54) Title: ACTIVE/INVASIVE EEG DEVICE AND TECHNIQUE



**WO 2005/058145 A2**

(57) Abstract: An electrode device for taking a plurality of EEG measurements, and an associated method of taking EEG measurements, whereby a plurality of electrode contact-points configured atop a support member are in electrical communication with, and in relative proximity to, an integrated circuit comprising converter circuitry adapted for converting analog EEG signals measured, having originated from within a patient, into digital signals prior to transmission thereof to a processing unit. The integrated circuit/circuitry (IC) may be supported by the support member or by a lead assembly having wiring for the digital signal transmission. The support member may have a plurality of layers and be generally flexible; as fabricated of any of a number of flexible, generally insulative biocompatible materials to which circuitry may be etched or deposited, exhibiting sufficient structural integrity to decrease likelihood of degradation during surgery or once implanted. The IC may further comprise circuitry for digital filtering and signal analysis of the digital signals. A quick-connect mechanism located along the lead assembly between the IC and a host processing unit, an antibiotic cuff mechanism located along the lead assembly between the quick-connect mechanism and the patient (to aid in preventing infection), as well as a stabilizer of the lead assembly to a location on the patient (e.g., surgically affixed to the patient's scalp) may be included.



SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

**Published:**

- *without international search report and to be republished upon receipt of that report*